6 A manufacturer of cell phones claims that 25% of students own a Pumpkin phone. Jeyeraj thinks that the proportion of students at his large college who own a Pumpkin phone is less than 25%. He plans to test the manufacturer's claim. He chooses a random sample of 30 students at his college. If the number of students who own a Pumpkin phone is less than 5, Jeyeraj will reject the manufacturer's claim.

(a) State suitable hypotheses for the test. [1]

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(b) Given that the true proportion of students at the college who own a Pumpkin phone is 10%, use a binomial distribution to find the probability of a Type II error. [3]

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At Florence's college, in a random sample of 40 students, it was found that 5 own a Pumpkin phone.

(c) Calculate an approximate 95% confidence interval for the proportion of students at Florence's college who own a Pumpkin phone. [3]

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